

## B R E V I O R A

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A NEW FROG OF THE GENUS *DISCODELES*  
(RANIDAE) FROM GUADALCANAL ISLANDWalter C. Brown<sup>1</sup>

and

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ABSTRACT. A fourth species of Solomon Island's *Discodeles*, *D. malukuna* (Ranidae), is described from 28 specimens collected near Malukuna, Guadalcanal, Solomon Islands. Among the species collected are three (*Hyla lutea*, a new species of *Batrachylodes*, and *Platymantis myersi*) previously unknown from Guadalcanal.

## INTRODUCTION

Boulenger (1918a, 1920), in his treatment of the probable evolutionary lines within the large genus *Rana*, noted that the hylaranid and discodelid subgenera shared one characteristic, horizontal groove associated with the dilated disks at the tips of the toes and sometimes the fingers, but differed in the characteristics, structure of the omosternum, and degree of union of the outer metatarsals. He also (1918b) pointed out the close affinities of the genera *Cornufer* and *Platymantis* (both are currently included in one genus, *Cornufer*, by many authors) with *Discodeles*, particularly in the presence of a horizontal groove on the toe disks and in the union of the outer metatarsals throughout most or all of their length. Noble (1931, p. 521 ff), recognizing the subfamily Cornuferinae in the Ranidae, was obligated to raise *Discodeles* and *Hylarana* to generic rank, since *Rana* (*sensu stricto*) was retained in the subfamily Raninae. He noted the close relationships of the genera *Ceratobatrachus*, *Discodeles*, *Cornufer* and *Platymantis* in

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terms of the structural features discussed above and their geographical unity. He also called attention to the presence of a distinct, fleshy, median papilla on the tongue in *Discodeles* and its absence in *Cornufer*, a character somewhat difficult to use in many preserved specimens. Noble further surmised that direct development was characteristic of the species in this group of genera. This suggestion was based on knowledge of direct development of *Discodeles opisthodon* and *Cornufer guentheri* (op. cit., p. 64). This has been substantiated since for a number of species of *Platymanthis* (includes *Cornufer*), see Alcalá, 1962.

Prior to 1968, dating from the time of the descriptions of the three species of *Discodeles* (Boulenger, 1884), collections in the archipelago failed to reveal any further species. These explorations, however, did indicate that the three species were rather widely dispersed within the Solomons (Table 1). Therefore the discovery in 1968 by one of us (Webster) of a population in the mountains of Guadalcanal which represents a very distinct species was somewhat of a surprise.

The populations which have been found in New Britain and the Admiralty Islands are seemingly closely related to one or the other of the three species originally recognized. *Rana ventricosa* Vogt, 1912, (= *vogti*, Hediger, 1934) is very similar to and may be conspecific with *D. opisthodon* (Brown, 1952, pp. 36-37; Zweifel, 1960, pp. 4-7); and *Rana bufoniformis cognata* Hediger (1934) is synonymized with *D. guppyi* (Zweifel, 1960, p. 4).

#### DISCODELES MALUKUNA sp. nov.

*Holotype*. MCZ 79462, a mature male, collected at Malukuna area, elevation about 2500 feet, Guadalcanal Island, July 2, 1968, by T. Preston Webster.

*Paratypes*. MCZ 79463-79489, from the same area as the holotype.

*Diagnosis*. A relatively small *Discodeles*, at least for a sample of males as compared to other known species, largest available male measuring 58.3 mm in snout-vent length; head broad relative to snout-vent length (Fig. 2); eye relatively large, slightly less than, to about equal to, length of snout; first finger longer than second or fourth when adpressed; tips of fingers not dilated, rounded, lacking a terminal circummarginal groove; first and fifth toe about one-fourth webbed, web reaching the distal edge of the tubercle of the inner toe and failing to reach or barely reaching the distal tubercle

TABLE 1

Distribution of the species of *Discodeles* in the Solomon Islands.

Species	Bougainville Group					Choiseul	Isabel (Santa Isabel)	New Georgia Group					Guadalcanal Group			Malaita	San Cristobal Group		
	Maka	Bougainville	Fauro (Faro)	Shortland (Alu)	Mono (Treasurey)			Vella Lavella	Ronngo (Ganongga)	Kolombangara (Kulumbangara)	New Georgia	Rendova (Himond)	Gatukai	Guadalcanal	Florida (Nggela)		Tulagi	San Cristobal	Ugi
<u>Discodeles malukuna</u>													x						
<u>Discodeles bufoniformis</u>		x	x	x	x	x	x	x		x	x				x	x		x	
<u>Discodeles guppyi</u>		x	x	x			x			x	x	x	x	x		x			
<u>Discodeles opisthodon</u>		x	x	x	x					x							x	x	

of the outer toe; second and third toes about one-half webbed; outer metatarsals not firmly united in the distal fourth, or less, of their length; venter grayish brown to blackish, usually with numerous white spots.

*Description.* A relatively small *Discodeles* as compared to known species; the snout-vent length, about 43 to 58 mm for 11 males, is unknown for adult females (the largest female, measuring 63.2 mm in snout-vent length, is possibly almost mature as judged by the fact that the oviducts are just beginning to show shallow convolutions); habitus tapering from the head to the groin; head breadth 115 to 123 per cent of head length for 11 mature males, 89 to 99 per cent of tibia length, and 44 to 49 per cent of snout-vent length for the same group of males; diameter of eye 91 to 102 per cent of length of snout; diameter of tympanum 39 to 55 per cent of diameter of eye; interorbital distance 17 to 21 percent of the head length for 11 mature males; upper jaw round, pointed, protruding; loreals moderately oblique and concave; fingers without webs; first finger longer than the second or fourth when adpressed; tips of fingers bluntly rounded, undilated (Fig. 4), without a circummarginal groove; subarticular tubercles large, prominent but not pointed; a few large, faint, palmar tubercles; metatarsal tubercles low, rounded, outer broadly oval, inner more elongate; toes with moderate webs, strongest between second—third and third—fourth; web reaching the distal edge of the subarticular tubercle of the inner toe and not or barely reaching the distal tubercle of the outer toe (Fig. 5); tips of toes rounded, moderately dilated and depressed, the ventral part of the disk separated from

the dorsal by a circummarginal groove; subarticular tubercles large and prominent but not sharply protruding; outer metatarsal tubercles small and round, inner moderately narrow and long (Fig. 5); skin of dorsum, lateral surfaces, and upper surfaces of the limbs smooth except for a pair of folds between the postorbital and axillary region; large, flat tubercles on posterior and ventral surface of thighs; venter faintly granular posteriorly in some instances.

*Color* (in preservative). Grayish brown to blackish brown on the dorsum; lateral surfaces and limbs lighter grayish to grayish brown; upper loreal region, borders of eyelids, upper tympanum and edges of urn-shaped folds (especially at posterior ends) black; lips with two prominent dark bars; a black anal patch and hind limbs marked by narrow, dark transverse bands; venter grayish to blackish brown with numerous light spots.

*Measurements of holotype* (in mm). Snout-vent length 58.3; length of head to posterior edge of tympanum 22.3; breadth of head 25.9; diameter of eye 7.7; diameter of tympanum 3.7; length of snout 8.2; interorbital distance 4.0; length of hind limb 92.0; length of tibia 28.5; length of third finger to proximal edge of basal tubercle 7.9; length of first finger to base of tubercle 5.6.

*Etymology*. The species name is that of the type locality in the central mountains of Guadalcanal.

*Remarks*. Of the four known species of the genus *Discodeles*, all present in the Solomon Islands, this is the most readily distinguished because of the extremely reduced webbing between the toes, the lack of warty tubercles on the dorsum and upper surfaces of the hind limbs (these are present in some degree even in *D. guppyi*, the least tuberculate of the other three species), the urn-shaped pattern formed by the pair of folds on the anterior part of the dorsum, and the conspicuous black markings.

The intuitive evaluation, head broader than for other known species of the genus (particularly for larger, mature specimens), is borne out by plotting head breadth against snout-vent length (Fig. 2), although this ratio is only slightly greater than for *bufoniformis*. Moreover, differential growth patterns for the four species are evident in several proportions: (1) head breadth relative to tibia length, Figure 3; (2) interorbital distance relative to head length, Figure 1.

In such characters as the lack of dorsal tubercles, the reduced webbing of the toes (intermediate between that of *Platymanthis guppyi* and *Discodeles opisthodon*), and the anterior, urn-shaped folds, *D. malukuna* is somewhat intermediate between the other

species of *Discodeles* and those species of *Platymantis* exhibiting the greatest degree of webbing between the toes. This appears to further substantiate the probable close relationship between *Discodeles* and *Platymantis* postulated by Noble (1931, p. 523).

Previously seven species of amphibians were known from Guadalcanal (Brown, 1952). These included:

*Hyla thesaurensis*  
*Batrachylodes vertebralis*  
*Ceratobatrachus guentheri*  
*Discodeles guppyi*  
*Platymantis guentheri*  
*Platymantis papuensis weberi*  
*Rana papua novaebritanniae*

In addition to *Discodeles malukuna*, Webster's collection from the mountainous area around Malukuna includes specimens of three other previously unrecorded species: *Hyla lutea*, *Batrachylodes* new species,<sup>1</sup> and *Platymantis myersi*.

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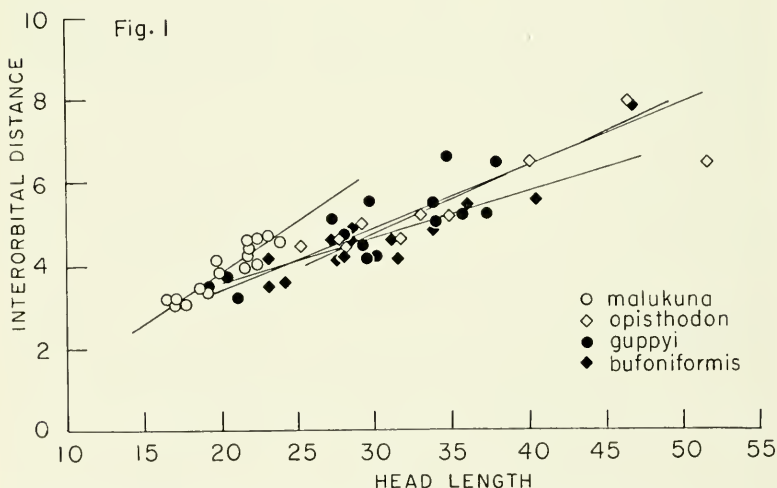


FIG. 1. Differences in interorbital distance relative to head length for four species of *Discodels*. (Measurements in mm.)

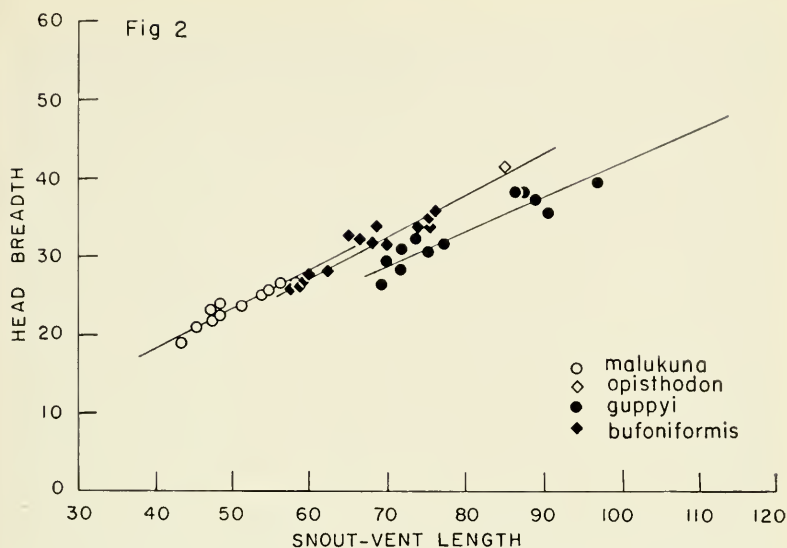


FIG. 2. Differences in head breadth relative to snout-vent length for four species of *Discodeles*. (Measurements in mm.)

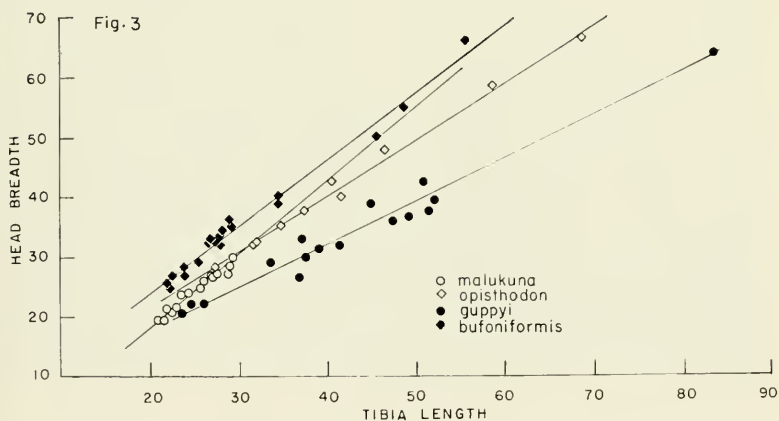


FIG. 3. Differences in head breadth relative to tibia length for four species of *Discodeles*. (Measurements in mm.)





FIG. 4. *Discodeles malukuna*; inferior view of hand.





FIG. 5. *Discodeles malukuna*: inferior view of foot.